Setting up your modem's connections

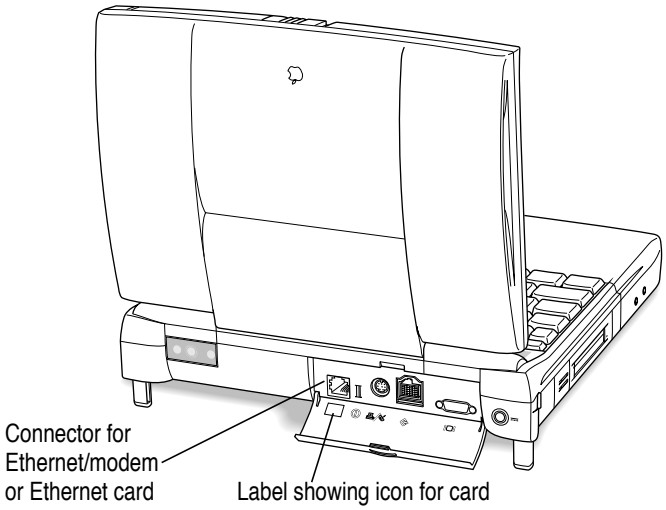
The PowerBook G3 Internal Modem is already installed in your PowerBook. To use the modem you need

- the single-line telephone cord supplied with your PowerBook, which has a two-wire RJ-11 connector at each end
- an analog telephone line with a modular jack
- (optional) the PowerBook G3 Internal Modem/Ethernet Adapter (a Y-adapter that is supplied with your PowerBook) to use the modem while connected to an Ethernet network

Connecting the telephone line to the modem

Follow these steps to connect the telephone line to the modem.

1 **Open the cover on the computer's back panel and check the label on the inside of the cover to verify that your computer has the Ethernet/modem card.**

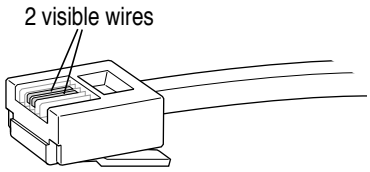


The label for the combination Ethernet/internal modem card shows the two icons illustrated below. (Some models of the PowerBook have an Ethernet-only card, which does not provide a modem connection.)

Ethernet/modem card label

2 **Locate the telephone cord that came with your computer.**

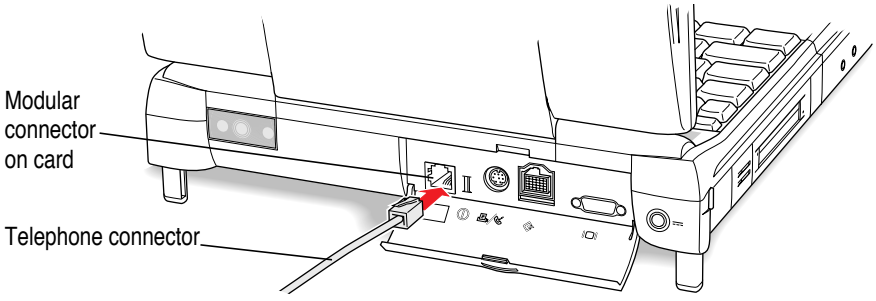
Be sure that the phone cord is a single-line, two-wire type.



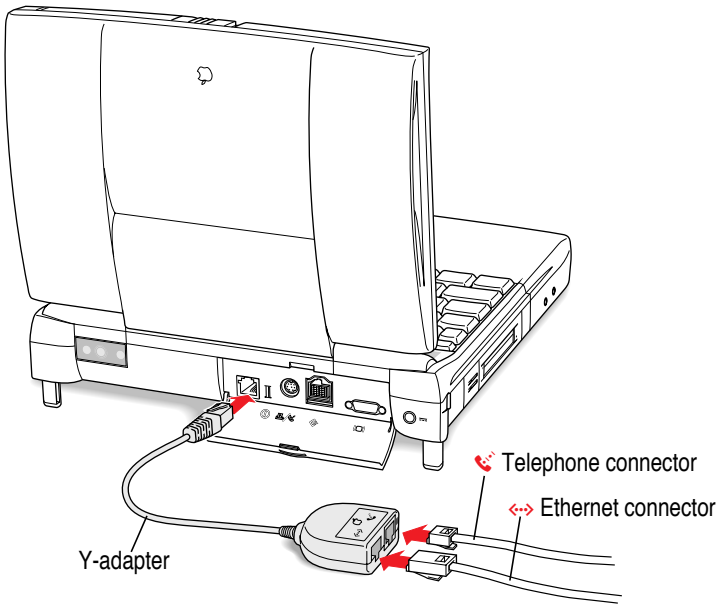
Single-line telephone cord

IMPORTANT Use the telephone cord that came with your computer or an equivalent single-line telephone cord. Any other type of telephone cord may not work correctly with the modem.

3 **Plug one end of the telephone cord that came with your computer into the internal modem port on your PowerBook.**



If you are using the adapter cable, plug it into the modem port. Then plug the telephone line into the adapter, in the connector labeled with the telephone icon.



4 **Plug the other end of the telephone cord into your telephone wall socket.**

IMPORTANT The telephone line must be an analog line—the type used in residences. Do not connect a digital telephone line to the modem, because the wrong type of line could damage the modem.

Once the telephone line is connected, you are ready to begin using the modem.

IMPORTANT When you have established a modem connection with another computer or an online service, do not put the computer to sleep. Doing so will disconnect the modem.

Using your modem

It's a good idea to become familiar with a modem's general operations. This section explains what modems do and shows how to designate the PowerBook G3 Internal Modem in the software you plan to use with the modem.

What modems do

Modems allow computers to communicate over telephone lines. While computers manipulate information in digital format, most telephone systems carry information as analog (wave) signals. Therefore, in order for computers to communicate over the PSTN (Public Switched Telephone Network), information must be converted to and from digital and analog formats. A modem (modulator/demodulator) handles these format conversions. The modem of the sending computer converts information from digital format to an analog signal by a process called *modulation*. The modem of the receiving computer converts the analog signal back to digital format by a process called *demodulation*.

Modems also dial, establish connections, and control the flow of data across the telephone line so that transmission takes place with optimal speed and accuracy.

Preparing for a modem connection

Before two computers can exchange data over telephone lines, their modems must establish a connection and agree on how data will be transmitted.

Your modem is already set to make the best possible connection automatically. See "Technical Specifications," later in this manual, for a list of specifications.

Note: In general, it is best to use your modem's automatic settings. If you want to control the speed, error control, and data compression settings yourself, see the Modem AT Command Set (a file on your hard disk) or the user's guide that came with your data communications software.

Determining the speed

A modem communicates with the computer to which it is connected (by means of a cable), and with another modem (by means of a telephone line). The computer-to-modem communication speed is generally faster than the modem-to-modem speed, often considerably faster. The "advertised" modem speed, such as 33,600 bits per second (bps), is the maximum speed for modem-to-modem connections.

Initially, your modem tries to connect to another modem at its fastest speed, which is 33,600 bps. If the remote modem cannot connect at this speed or if the telephone line does not provide a completely clear connection, your modem falls back to the next highest speed. Fallback continues until the two modems agree on the highest speed supported by both using the particular telephone line connection.

IMPORTANT The actual connection speed of your modem may vary, depending on the specific telephone line in use, the quality of the connection, and other factors that affect communications.

Error control

Error control is used by modems to ensure data accuracy. Your modem and the remote modem must agree on an error control method. Your modem will try to use one of two types of error control, V.42 or MNP class 2–4. If the remote modem does not support either of these types of error control, no error control is used.

Data compression

Data compression increases the speed of your modem by eliminating gaps and redundancies in the data. With data compression enabled, the speed can increase up to 4 times the normal speed.

Your modem can use two different types of data compression, V.42 bis or MNP class 5. If the remote modem does not support either of these types of data compression, no data compression is used.

Software for your modem

Your Macintosh PowerBook has modem software installed, including programs to connect to the Internet and to send and receive faxes. For instructions on using these programs, see their electronic manuals on your computer's hard disk.

Choosing the port setting

You must specify the modem port to each communications program before you can connect to another computer by modem.

The example that follows shows how to specify the modem port in America Online (AOL), one of the programs installed on your computer's hard disk.

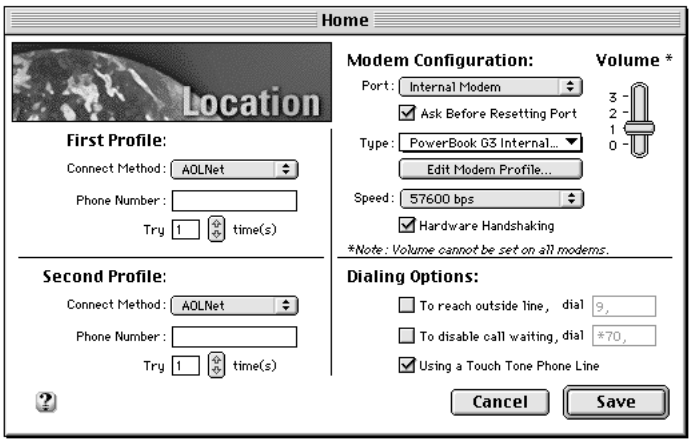
Follow these steps to specify the modem port in the AOL software.

1. **Open AOL (on your hard disk).**
2. **If you are new to America Online, click Continue in the dialog box that appears. If you have an AOL account already, click Upgrade.**
3. **Follow the instructions on the screen to set up an AOL account or to upgrade your current AOL account.**

   When you finish setting up your AOL account, the AOL Welcome window is on your screen.

4. **Click Setup in the Welcome window.**

The Location window opens, like the one below.



5 **In the Port pop-up menu, choose Internal Modem.**

6 **In the Type pop-up menu, choose PowerBook G3 Internal 33.6.**

7 **In the Speed pop-up menu, choose 57600.**

Always choose the highest speed available. This is the speed at which the computer communicates with the modem.

8 **Click Save.**

Now the AOL software is ready to use with your modem.

IMPORTANT You must repeat this procedure—specifying the modem port—for each communications program you plan to use with the modem.

Modem tips and troubleshooting

If your modem does not make a call or a connection, try these procedures.

Make sure the modem is specified correctly in your communications software.

The modem information you should provide in the setup portion of a communications program includes the following:

- The modem port is Internal Modem.
- The modem's name is PowerBook G3 Internal 33.6 or PowerBook G3 Internal Modem in the list of modems for a communications program.
- The modem initialization string is AT&F. (You may be able to use the initialization string as the necessary setup information in a communications program that does not have PowerBook G3 Internal Modem in its list of modems.)
- If your communications program has an option for hardware handshaking, turn it on. In some communications programs, this capability is called "flow control"; the option to select is CTS & RTS (DTR).

Make sure the modem is selected in the communications program.

Depending on the software you are using, check the modem setup procedure and verify that the PowerBook G3 Internal Modem or PowerBook G3 Internal 33.6 (they are the same modem) is selected. See the instructions that came with your communications program for details on selecting the modem.

In some instances, you may need to select the modem in a control panel. For example, if you are using Apple Remote Access 3.0 (or a later version), you need to open the Remote Access control panel and specify the modem. If you are using Apple Remote Access 2.1, you specify the modem in the Remote Access Setup control panel.

If you do not have Apple Remote Access software installed, open the Modem control panel and make sure the PowerBook G3 Internal Modem or PowerBook G3 Internal 33.6 is selected in it.

Make sure the modem is communicating with the telephone line.

Follow these steps to test the telephone connection.

1 **Open the Monitors & Sound control panel and check that the volume is set above the lowest mark.**

By increasing the volume, you can verify both that there is a dial tone when you try to open communications and that the modem can dial telephone numbers.

2 **Open your communications program and enter terminal mode (if the program offers this feature).**

Terminal mode sends the characters you type on the keyboard to your modem and displays them on the screen.

Many communications programs, such as ClarisWorks,® provide "terminal emulation." You can use this capability to talk directly to your modem by first specifying the modem port, then opening a connection to that port. With the connection open, you can try dialing your own telephone number by typing "ATD555-1212" (where the numbers are replaced by your phone number). If you hear a busy signal, you are connected properly.

3 **Try dialing your own telephone number.**

If you hear a busy signal, you are properly connected.

4 **If you do not hear a dial tone when you try to dial a number, test your telephone line by connecting a working telephone and cable to the line.**

Plug the telephone into the wall jack to verify the dial tone. If there is none, the telephone line is the source of the problem. If you hear a dial tone on the telephone, the line may be a digital line, in which case the modem will not work.

5 **If you hear a dial tone on your telephone but not through your modem, test your modem's telephone cable by connecting it to the wall jack and to the telephone.**

If there is no dial tone, the telephone cable is the source of the problem. Return it to your service provider for replacement.

6 **If your modem still has no dial tone, see the service and support information that came with your computer for a number to call.**

7 **When the modem makes a connection to another modem, it is normal to hear several clicks during the process of connecting. The clicks do not indicate that anything is wrong with the modem.**

IMPORTANT When you have established a modem connection with another computer or an online service, do not put the computer to sleep. Doing so will disconnect the modem.

IMPORTANT If your modem needs repair, take it to an Apple-authorized service provider. Do not attempt to repair or reinstall modem hardware yourself.

Setting up your Ethernet connection

The PowerBook G3 Internal Modem/Ethernet card is already installed in your PowerBook. To use Ethernet with your computer you need

- the Ethernet cable that came with your computer
- an available connection on an Ethernet network
- (optional) the PowerBook G3 Internal Modem/Ethernet Adapter (a Y-adapter that is supplied with your PowerBook) to use the modem while connected to an Ethernet network

Connecting an Ethernet cable to the card

Follow these steps to connect an Ethernet cable to the card in your PowerBook.

1 **Open the cover on the computer's back panel and verify that your PowerBook has an Ethernet-capable card.**

Check the label on the inside of the cover to be certain that the card is intended for Ethernet connections. The combination Ethernet/modem card label shows the two icons illustrated below.

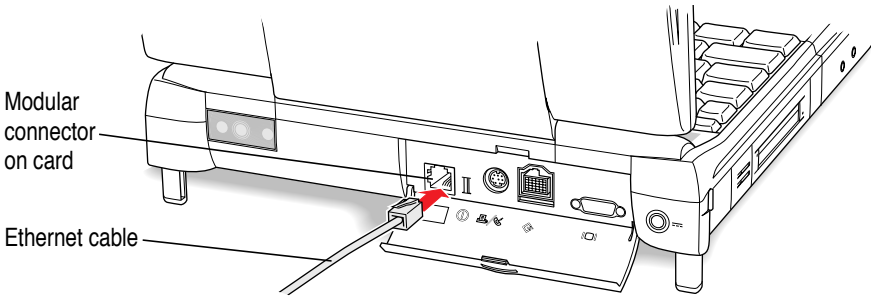
Ethernet/modem card label

2 **Locate the Ethernet cable that came with your computer (or an equivalent cable with a modular RJ-45 connector) and connect one end of the cable to the network.**

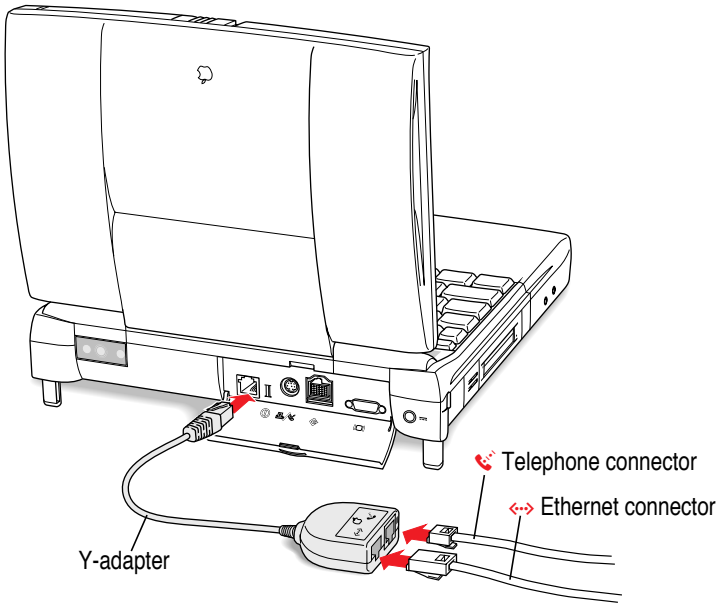
You can connect a modular (twisted-pair or 10Base-T) Ethernet cable. A shielded Ethernet cable is supplied with your computer.

Consult a network administrator or other expert if you need help making the network connection.

3 **Connect the free end of the Ethernet cable to the connector on the card.**



If you are using the Ethernet/modem adapter, plug it into the connector on the modem card. Then plug the Ethernet cable into the adapter, using the connector with the Ethernet icon.



4 **Start up the PowerBook, if it is not already on.**

5 **To use your Ethernet connection, open the AppleTalk control panel and choose Ethernet from the “Connect via” pop-up menu.**

If you want to use a TCP/IP-based application, make sure that the TCP/IP control panel is configured appropriately.

For more detailed instructions on using the network control panels, see the Networks topic area of Mac OS Help.

Using Ethernet and a modem at the same time

By using the adapter (supplied with your computer) for your combination Ethernet/modem card, you can connect an Ethernet cable and a telephone line to the card at the same time. Your PowerBook can communicate via modem and Ethernet at the same time.

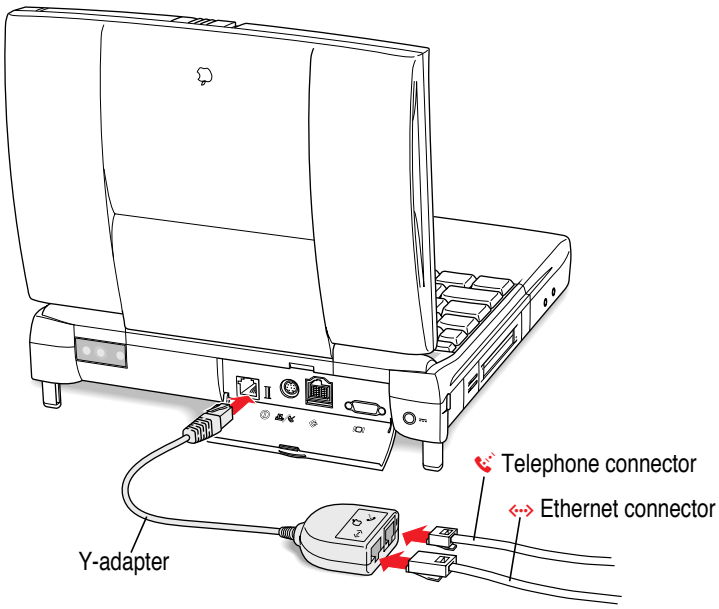
To use both Ethernet and the modem, follow these steps:

1 **Open the cover on the computer’s back panel and verify that your computer has a combination Ethernet/modem card.**

Check the label on the inside of the cover. The label should show both Ethernet and modem icons, as in the illustration below.

Ethernet/modem card label

2 **Locate the adapter that came with your computer and connect the single end of it to the card.**



3 **Attach the telephone cord and Ethernet cable to the appropriate connectors in the adapter.**

The adapter has Ethernet and modem icons that indicate which connector to use for the cable and cord.

4 **Start up the computer (if it is not already on) and set up your software to use the modem and Ethernet connections.**

Technical specifications

Internal standards compliance

Modem

■ ITU V21	300 bps	Full-duplex
■ ITU V22	1200 bps	Full-duplex
■ ITU V22 bis	2400 bps	Full-duplex
■ ITU V23	1200/75-75/1200 bps	Full-duplex
■ ITU V32 bis	14400 bps	Full-duplex
■ ITU V34 (ANNEX12)	33600 bps	Full-duplex
■ U.S. Standards	Bell 103 and 212A	Full-duplex

Fax

■ ITU V27 ter	4800 bps	Half-duplex
■ ITU V29	9600 bps	Half-duplex
■ ITU V17	14400 bps	Half-duplex

General

■ Command set:	Hayes compatible, TR29 class 1 Group 3 fax, voice macro commands
■ Error correction:	MNP4-V42
■ Data compression:	MNP5-V42 bis
■ Serial speed:	300 to 115200 bps
■ Line speed:	300 to 33600
■ Data format:	Serial, binary, asynchronous, 7 or 8 bits, even or odd parity
■ Dialing:	Tone or pulse
■ Fax functions:	Automatic detection of fax

Command set

■ AT Command Set:	Extended Hayes AT command set

Data communications standards

- 33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400 bps — ITU V.34 (ANNEX12)
- 14400, 12000, 9600, 7200, 4800 bps — ITU V.32 bis
- 9600, 4800 bps — ITU V.32
- 2400 bps — ITU V.22 bis
- 1200 bps — Bell 212A
- 1200 bps — ITU V.22
- 1200/75 bps — ITU V.23
- 75/1200 bps — ITU V.23
- 300 bps — ITU V.21
- 300 bps — Bell 103

Group 3 fax communication standards

- 2400, 4800 bps — ITU V.27 ter
- 7200, 9600 bps — ITU V.29
- 12000, 14400 bps — ITU V.17

Error control

- ITU V.42
- MNP Classes 2–4
- Fax Error Correction Mode (ECM) — ITU T.30

Data compression

- ITU V.42 bis (up to 4:1 compression)
- MNP Class 5 (up to 2:1 compression)

Dialing capability

- Tone/pulse dialing
- Auto or manual dialing and answering

Data transmission and format

- Full- or half-duplex operation
- Asynchronous or framed modes
- Character formats:
  - 5, 6, 7, 8 data bits
  - 1 or 2 stop bits
  - Odd, even, or no parity

Macintosh PowerBook
Internal Modem/Ethernet

User's manual for Macintosh PowerBook G3 computers

Apple Computer, Inc.

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Communications regulation information

FCC statement

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. See instructions if interference to radio or television reception is suspected.

Radio and television interference

The equipment described in this manual generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple's instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)

If necessary, consult an Apple-authorized service provider or Apple. See the service and support information that came with your Apple product. Or, consult an experienced radio/television technician for additional suggestions.

IMPORTANT Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC Certification and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of Apple peripheral devices and Apple shielded cables and connectors between system components. It is important that you use Apple peripheral devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Apple peripheral devices and the proper shielded cables and connectors through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

Industry Canada statement

This Class B device meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la Class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

VCCI Class 2 statement

情報処理装置等電波障害自主規制について

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づく第二種情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをしてください。

Notify your telephone company

Some telephone companies require that you notify the local business office when you hook up a modem to their lines.

Information you need in the United States

The PowerBook G3 Internal Modem complies with Part 68 of the FCC rules. On the back of this equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN). If requested, provide this information to your telephone company.

- Ringer equivalence number (REN): 0.7B

  The REN is useful to determine the quantity of devices you may connect to your telephone lines and still have all those devices ring when your telephone number is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.
- Telephone jack type: USOC, RJ-11

  An FCC-compliant telephone cord and modular plug are provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack that complies with Part 68 rules. See the installation instructions for details.

Telephone line problems

If your telephone doesn’t work, there may be a problem with your telephone line. Disconnect the modem to see if the problem goes away. If it doesn’t, report the problem either to your local telephone company or to your company’s telecommunications people.

If disconnecting the modem eliminates the problem, the modem itself may need service. But first check the cord connecting the telephone line to the modem. Make certain that the cord is the single-line, two-wire cord (supplied with your computer). If the problem persists, see the service and support information that came with your Apple product for instructions on how to contact Apple or an Apple-authorized service provider for assistance.

If you do not disconnect your modem when it is adversely affecting the telephone line, the telephone company has the right to disconnect your service temporarily until you correct the problem. The telephone company will notify you as soon as possible. Also, you will be informed of your right to file a complaint with the FCC.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of your equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service.

The PowerBook G3 Internal Modem will not work with party lines, cannot be connected to a coin-operated telephone, and may not work with a private branch exchange (PBX).

Telephone Consumer Protection Act

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it was sent and an identification of the business or other identity, or other individual sending the message and the telephone number of the sending machine of such business, entity, or individual.

Information you need in Canada

The Canadian Department of Communications (DOC) label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to a user's satisfaction.

Before installing this equipment, make sure that you are permitted to connect to the facilities of the local telecommunications company. Be sure you use an acceptable method of connection to install the equipment. In some cases, you may extend the company's internal wiring for single-line individual service by means of a certified telephone extension cord. Be aware, however, that compliance with these conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any equipment malfunctions or repairs or alterations that you make to this equipment may cause the telecommunications company to request that you disconnect the equipment.

In Canada, contact Apple at:
7495 Birchmount Road
Markham, Ontario
L3R 5G2
800-263-3394

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

WARNING Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority or electrician.

- Load number: 0.3

  The load number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to the telephone loop that is used by the device, to prevent overloading. The termination of a loop may consist of any combination of devices, subject only to the requirement that the sum of the load numbers of all devices does not exceed 100.
- Telephone jack type: CA-11